

Appl. No.: 10/779,973  
Amendment Dated June 17, 2005  
Reply to Office Action of March 29, 2005

GRY-117US

**Amendments to the Claims:** This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Currently Amended) Valve actuator for internal combustion engines, comprising at least one electromagnet having a coil and a magnetic plate, whose movement controls the displacement of the valve, wherein the parameters of the electromagnet and of the plate are such that at least part of the magnetic circuit formed by the electromagnet and the plate is in a state of magnetic saturation when the magnetic plate is in the proximity of the electromagnet, so as to minimize the force of attraction exerted on the plate and therefore its velocity; the parameters being such that the magnetic circuit is in the state of magnetic nonsaturation when the plate is located at a distance from the electromagnet, so as to maximize the force attraction exerted on the plate and therefore to minimize the switching time.
2. (Previously Presented) Actuator in accordance with claim 1, wherein the parameters are such that at least part of the magnetic circuit is in the state of magnetic saturation for an air gap between the plate and the electromagnet of between 0 mm and at most 1 mm.
3. (Previously Presented) Actuator in accordance with claim 1 or 2, wherein the parameters of the electromagnet and of the plate comprise parameters related to at least one of the shape, the dimensions of the plate, the nature of the material forming the plate and the body of the electromagnet and the intensity of the current flowing through the coil of the electromagnet.
4. (Previously Presented) Actuator in accordance with claim 3, wherein the thickness of the plate is such that this plate is magnetically saturated in the proximity of the electromagnet.
5. (Previously Presented) Actuator in accordance with claim 3, wherein the magnetic plate has at least one contracted part intended to be saturated when this plate is located in the proximity of the electromagnet.

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6. (Previously Presented) Actuator in accordance with claim 3, wherein the material forming the plate has a lower saturation threshold than the material forming the body of the electromagnet.

7. (Previously Presented) Actuator in accordance with one of the claims 1 or 2, further comprising a regulator controlling the current in the electromagnet.

8. (Previously Presented) Internal combustion engine comprising at least one valve in accordance with claim 1 or 2.